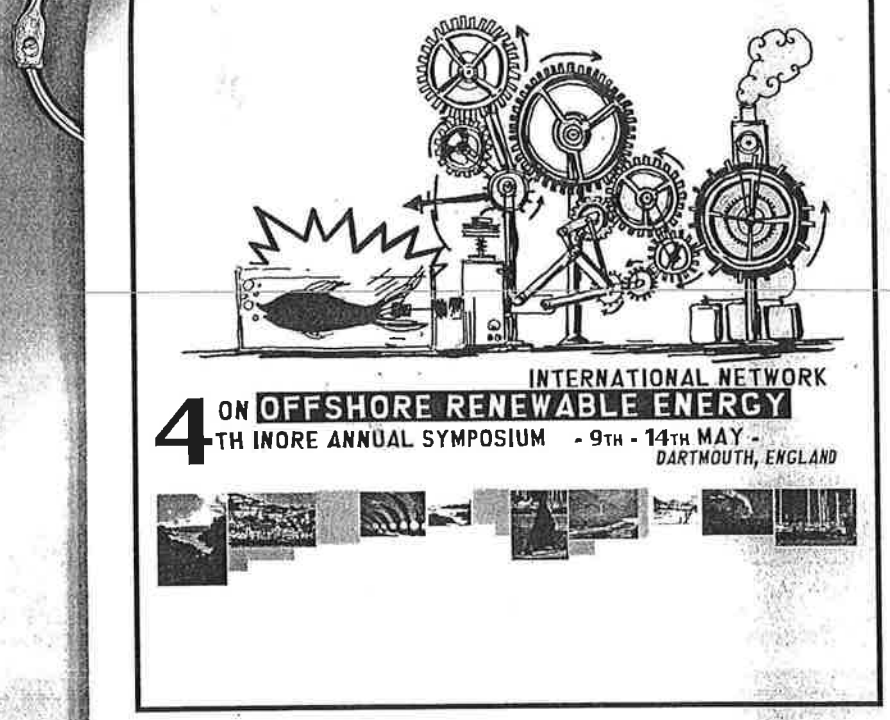

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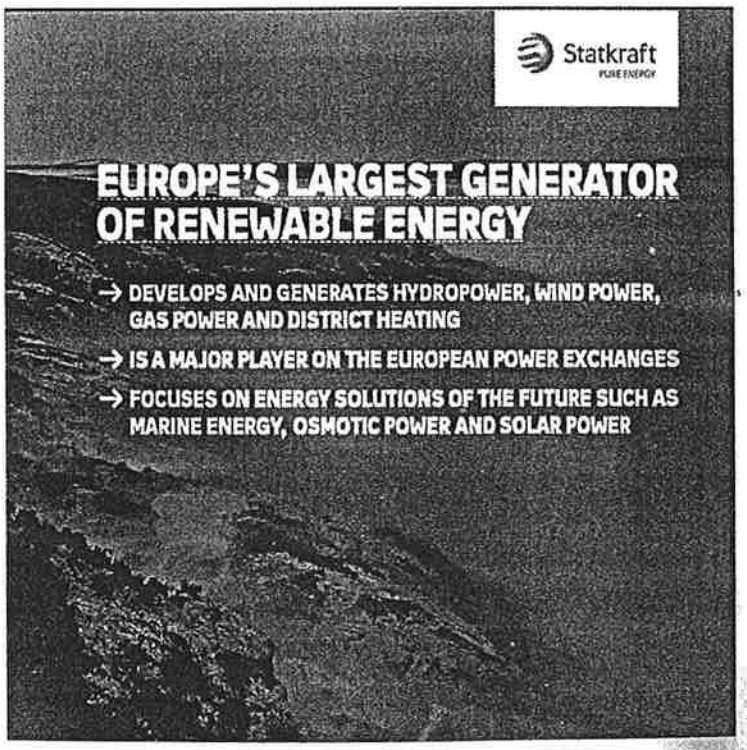

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## Numerical study of wave overtopping using FLOW-3D

Due to increased computing capacity of present computers, numerical simulations have become a useful tool, complementing or replacing experimental tests when studying interaction of coastal structures with waves. A numerical wave flume is being developed at Ghent University (Belgium) using FLOW-3D to study wave-structure interactions. A combination of mass source generation and wave absorption (built in through customization) has been used to generate regular, irregular, linear and non-linear waves, validated in a flume without structures. In a next step, "numerical coastal structures" have been positioned inside the flume. The work to be presented focuses on the phenomenon of wave overtopping. As waves approach a sloping structure, they run up this slope and overtop the structure when the crest freeboard of the structure is smaller than the run-up height. Overtopping wave energy converters are designed to maximize the overtopping discharge. Physical model tests have been carried out on a scale model of this type of structures during Spring 2010. Results of regular wave tests with several slope angles, water depths and wave conditions are used to validate the numerical flume. Preliminary comparison between the experimental and numerical results indicates that FLOW-3D is able to give accurate predictions of individual overtopping volumes.

NOTES